



UNITED STATES ENVIRONMENTAL PROTECTION AGENCY  
REGION III  
1650 Arch Street  
Philadelphia, Pennsylvania 19103-2029

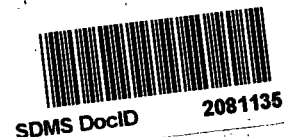
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SEP 28 2005 #

**SUBJECT:** Request for Funding for Removal Action and Exemption from the  
\$2 Million and One Year Statutory Limit for a Removal Action  
Elkton Farms Firehole Site  
Elkton, Cecil County, Maryland

**FROM:** Abraham Ferdas, Director *Chlorine*  
Hazardous Site Cleanup Division (3HS00)



**TO:** Thomas P. Dunne, Assistant Administrator  
Office of Solid Waste and Emergency Response (5101)

**THRU:** Debbie Dietrich, Director  
Office of Emergency and Remedial Response (5201)

**ATTN:** Gilberto Irizarry, Director  
Program Operations and Coordination Division (5104A)

**ISSUE**

The attached Action Memorandum pertains to the Elkton Farms Firehole Site, (Site) Elkton, Cecil County, Maryland. The On-Scene Coordinator (OSC) conducted an Assessment of the Site in accordance with the National Oil and Hazardous Substance Pollution Contingency Plan (NCP). This assessment confirmed the existence of a threat to the public health, welfare, and the environment due to the widespread surface and subsurface contamination of over 55 acres of farmland with explosive ordnance and discarded military munitions.

Because the conditions at the Site continue to meet the criteria set forth in Section §300.415 of the NCP, and the Region finds that conditions at the Site described above and with the attached Action Memorandum constitute a public health and environmental threat warranting immediate attention, and no other person or agency with authority can capability respond to the emergency in a timely manner, the attached Action Memorandum requests funds in the amount of \$3,650,000. This allocation will enable Region III to properly stabilize, treat, and/or transport and dispose of discarded military munitions and unexploded ordnance from the Site. With this approval, the Total Project Ceiling is \$4,735,000 of which \$2,750,000 are funds from the Regional Removal Allowance.

Attachment: Action Memorandum



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**SUBJECT:** Request for Funding for Removal Action and Exemption from the  
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Elkton Farms Firehole Site  
Elkton, Cecil County, Maryland

**FROM:** *Gerald T. Hest*  
Charles E. Fitzsimmons, On-Scene Coordinator  
Eastern Response Branch (3HS31)

**TO:** Abraham Ferdas  
Hazardous Site Cleanup Division (3HS00)

**THRU:** Gerald T. Heston, Chief *GTH*  
Eastern Response Branch (3HS31)

**I. PURPOSE**

The purpose of this Action Memorandum is to request funding for a Removal Action at the Elkton Farms Firehole Site ("Site"), and to request an exemption from the one year and \$2 million statutory limitation, pursuant to the Comprehensive Environmental Response, Compensation and Liability Act of 1980, as amended ("CERCLA"), 42 U.S.C. § 9601 et seq. The Site is located at 183 Zeitler Rd., Elkton, Cecil County. Based upon information obtained from the Removal Site Evaluation (RSE) and a review of that information by the On-Scene Coordinator (OSC), CERCLA funding is necessary to conduct a Removal Action to prevent further release of CERCLA hazardous substances from the Site and to protect public health welfare and the environment. Funding in the amount of \$4,735,000.00 (of which \$2,750,000.00 is from the Regional Removal Allowance) is necessary to mitigate the threats identified in this Action Memorandum.

**II. SITE BACKGROUND AND CURRENT CONDITIONS**

**A. Site Location, Historical Background**

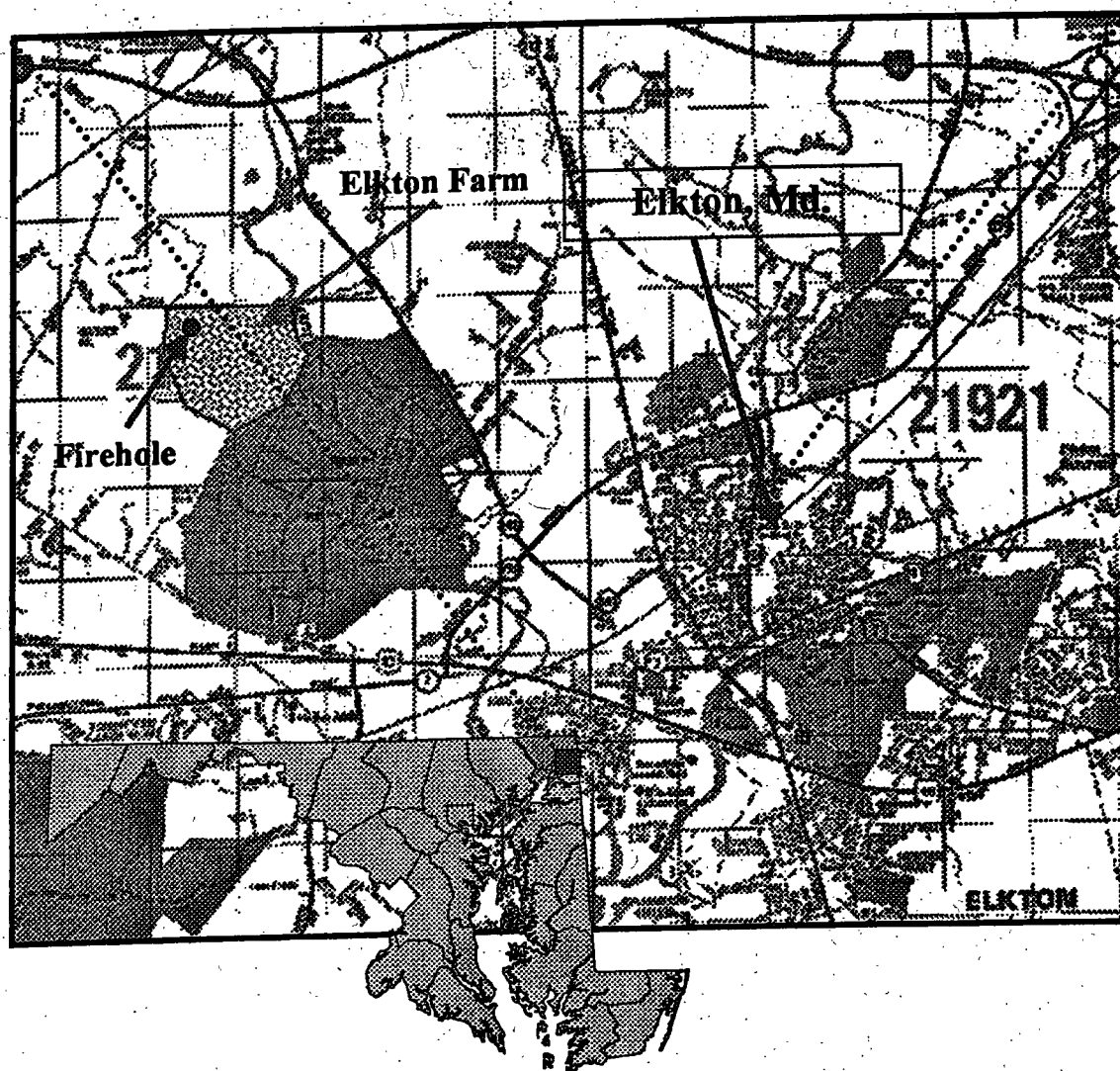
The Elkton Farm Firehole Site is located two miles northwest of Elkton, Maryland. The Site occupies at least 55 acres (and potentially 100 acres or more) of an approximate 400-acre farm property presently owned by the MARVA, Ltd. Partnership ("Elkton Farm property") (Figure 1). The Firehole parcel is located on the USGS Bayview/Newark West quadrangles at approximately 39°38' north latitude and 75°53' west longitude and has a Maryland grid coordinate of 655,000 N



and 1,117,500 E. The site is bounded on the west by Laurel Run, to the north by Zeitler Road, and to the East by Little Elk Creek. A gravel access road bisects the western quadrant of the site. The areas of potential contamination currently identified by EPA are in this western quadrant west of the gravel road. Land use surrounding the site is primarily agricultural/residential, with an area of medium to heavy industry property to the southeast across Little Elk Creek.

During much of its history, the Elkton Farm property has been used as a farm, with much of the surrounding fields (including the location of the fireholes) under cultivation. The contamination to be addressed pursuant to this action memorandum appears to have been disposed of during World War II as part of the operations of Triumph Explosives, Inc., which occupied property adjacent to the Elkton Farm property and which is further described below.

Figure 1 Site Map



The Elkton Farm property lies north of, and adjacent to, the Triumph Industrial Park, a site whose environmental implications are currently being addressed in a collaborative effort involving EPA and the Maryland Department of the Environment ("MDE") as the Little Elk Creek Area-Wide One Cleanup Program Pilot Project. The property now occupied by the Triumph Industrial Park was originally owned and operated by the Triumph Fuse and Fireworks Company, which was formed in 1933 by the merger of two fireworks companies. Its principal products were fireworks and "fusees" (flares). Beginning as early as 1935 the company had contracts with the U.S. Navy and others to produce fusees, "floatlights" (naval markers), and a variety of other pyrotechnic devices. In 1938 the company changed its name to Triumph Explosives, Inc. ("TEI") and during the next few years, through a series of property acquisitions, expanded its manufacturing operations to include production of other explosive and additional pyrotechnic devices, which it sold to the U.S. Army and Navy as well as other governmental (non-U.S.) customers. During a four month period bridging 1942 and 1943 the United States assumed direct control of ordnance manufacturing operations at the TEI plant (which the US Army Corps of Engineers ("USACE") has acknowledged included the Elkton Farm property), pursuant to a Presidential executive order. After replacing the original management (two of whom were convicted of bribing acquisition officials) with new personnel, the U.S. returned control of the plant to TEI in 1943.

Ordnance waste disposal activities on the Elkton Farm property appear to have first taken place in late 1942, when manufacturing operations at TEI were expanded to accommodate a new 40 mm antiaircraft ordnance production facility for the U.S. Navy. The new facility was built on the location of an existing TEI ordnance waste disposal area, and thereafter ordnance wastes were disposed of on the Elkton Farm property which TEI had purchased. Specifically, various wastes, including munitions residue, were disposed of in a series of shallow pits on the Elkton Farm. TEI apparently collected waste material (including off spec ordnance items and process wastes) from its operations and placed it in drums. This accumulated waste was kept wetted with alcohol or ether to prevent spontaneous combustion, and then carried to a series of shallow pits at the Elkton Farm property, spread thinly, and allowed to burn. Plant personnel monitored the burn until the wastes were consumed. Photographs in TEI newsletters from the 1940s show the operations of the Fireholes. There were several explosions at the Firehole Site (resulting in some deaths), which may have resulted in unburned ordnance being blown away from the immediate area of the fireholes.

Aerial photographs from the era indicate that disposal activities did not take place on the Elkton Farm property until some time after November, 1942. TEI's contract to produce 40 mm ordnance ended in 1945, after which TEI's operations shrank quickly and it stopped disposing of wastes on the Elkton Farm property. Since the end of TEI's operations the firehole area has been used principally for farming.

In the Spring of 1946 TEI sold the property to Argus and Laura Robinson, who sold it later that year to Martin Herron. The current owner of the Elkton Farm property, MARVA, is comprised of several siblings who inherited the property from their father Martin Herron. One of the partners in MARVA reports that the Elkton Farm property has been leased to the same farmer, William Spry, for over 30 years. Spry continues to grow seasonal crops throughout the Elkton Farm's fields. MARVA has entered into an agreement of sale with a private developer who intends to build a residential development on the Elkton Farm property.



It should be noted that the Elkton Farm Firehole Site is one of four areas of contamination that have been or are being addressed on the Elkton Farm property. The four areas include:

- Unit One, comprised of a number of abandoned drums, was addressed by a CERCLA Region III Removal Action in the early 1990's.
- Unit Two is the site of the historic fireholes to be addressed by this Removal action.
- Unit Three is the site of a rocket test/cleaning center which Morton Thiokol leased from MARVA, and whose cleanup by Morton Thiokol is being supervised by MDE.
- Unit Four is a parcel of property adjacent to the G. E. Railcar property (located in the Triumph Industrial Park) which is the potential source of a chlorinated solvent plume. This has been addressed by a separate investigation.

#### **B. USACE, MDE, and EPA site assessment and investigation activities**

Following is a summary of relevant site assessment and investigation activities undertaken by USACE, EPA and MDE. Specific conclusions regarding current Site conditions based on these activities are set forth further below.

#### **USACE**

In 1991 USACE, after being notified by MDE of its potential liability for contamination at the TEI site, issued an Inventory Project Report (INPR) pursuant to DOD's Defense Environmental Restoration Program - Formerly Used Defense Sites ("DERP-FUDS") for the TEI Site (described as the Morton Thiokol - Triumph Industries Site). The INPR found that there were areas of contamination within the former TEI site. The INPR also asserted that although the U.S. government assumed control of TEI's operations for a four month period in 1942 and 1943, at no time did it "own or lease" the property, nor was there any evidence that "during the period of operational DOD management of the facility, the Navy ever modified the company's standard plant operational or waste handling policies." The INPR also noted that there appear to have been a number of subsequent owners and/or operators at the TEI Site which could have contributed to any contamination. Therefore the INPR recommended that USACE address the TEI Site as a PRP/HTW site, i.e. one which generally is not eligible for DERP funding, and as to which any DOD liability should be addressed in conjunction with other PRPs.

While the 1991 INPR did not include the Elkton Farm property per se, this report is relevant to the Elkton Farm Firehole Site because the USACE has subsequently acknowledged that this property was part of the operations which the U.S. government took over for the four month period in 1942 and 1943.

After being identified as a potentially responsible party by MDE, in 1992 USACE issued a "Final Report, Site Operations/Ownership History Triumph Explosives." ("1992 Final Report"). While focusing on the original TEI Site, this report also contains ownership and operational information concerning the Elkton Farm property, including the Firehole Site. The USACE's 1992



report stated that all wastes from TEI's operations (both U.S. Navy and Army) were disposed of at the fireholes.

On May 28, 2004 USACE Ordnance & Explosives Safety Specialists toured the Site, during which they identified a number of Munitions and Explosives of Concern ("MEC") related debris on the surface.

USACE has also drafted a preliminary "Risk Assessment Code" ("RAC") score for the Site, based on its May 28, 2004 visit, which assigned it a RAC score of 1, the highest severity, calling for an expedited INPR and "recommending further action" by USACE.<sup>1</sup>

## MDE

MDE has been investigating contamination left behind by TEI and subsequent owners and operators of properties comprising the Little Elk Creek Area-Wide One Cleanup Program Pilot Project for a number of years. Of particular relevance here, in July 2002 MDE undertook a geophysical survey of the firehole area. MDE's contractor, NAEVA Geophysics, Inc. ("NAEVA") reviewed site historical information, aerial photographs, performed site reconnaissance and performed an extensive geophysical survey utilizing EM-31 magnetometer technology.

On September 15, 2004 MDE issued a Formerly Used Defense Site (FUDS) Inspection Report of the Elkton Farms Firehole Site. The purpose of the FUDS Inspection was to assess the actual and potential release of hazardous substances from the site by way of groundwater, surface water, soil exposure and air. The scope of the FUDS Inspection included reviewing the available file information, site reconnaissance, and conducting sampling through the U.S. EPA Contract Laboratory Program (CLP).

A subsequent site visit by MDE and its contractor UXB, Inc. was conducted in December, 2004 and January, 2005 which included some limited excavation into one of the suspected fireholes which revealed a layer of slag covering Discarded Military Munitions ("DMM").

## EPA

As a result of MDE's Site Investigation (SI) activities the EPA Region III Removal Branch was requested by EPA's Brownfields and Site Assessment Section to perform a Removal Site Evaluation ("RSE") of the MEC, including DMM and any other imminent and/or explosive hazard for determination of a Superfund Time Critical or Emergency Removal Action, in accord with EPA's Interim Final Handbook on the Management of Munitions Response Actions, EPA 505-B-01-001, May 2005. ("EPA Munitions Handbook")<sup>2</sup> As part of this RSE, the EPA and its START contractor (Tetra Tech Inc.), at the direction of the Federal On Scene Coordinator (FOSC), surveyed the Firehole Site in May, 2005 which included the 32 acre parcel previously identified by the MDE above.

<sup>1</sup> Note that in its July 18, 2005 response to EPA's 104(e) request USACE claims that the RAC worksheet is "a predecisional document that has not been approved or adopted by the Division," and therefore should not be released to the public.

<sup>2</sup> Under EPA and DoD guidance, MEC includes (1) Unexploded ordnance (UXO); (2) Discarded military munitions (DMM); or (3) Munitions Constituents (e.g. TNT, RDX) which present in high enough concentrations to pose an explosive hazard. MEC was formerly known as Ordnance and Explosives (OE) in DoD parlance. EPA Munitions Handbook at xix.



The purpose of the survey was to verify the existence of the Firehole pit(s), and to determine both the depth and areal extent (vertical and horizontal) of the DMM release. Results from this survey revealed the existence of several subsurface anomalies which are likely locations of the fireholes. This survey also suggested that the area of concern extends beyond the originally estimated 32 acre parcel, and could cover 55 acre areas or more.

### **III. Site Conditions**

The Elkton Firehole Site has not yet been completely geophysically surveyed. MEC may occupy as large as 150 acres, and is part of a flat farm field. The Site presently is planted with a winter wheat crop (a portion of which was harvested in late June and early July, 2005). The wheat is as high as 4 feet. Fifty five (55) acres of the overall Site has been geophysically surveyed, and presently is the area of concern. Results from the START survey indicate at least two fireholes, and potential DMM throughout the 55 acre area of concern. This area of concern includes the two suspected fireholes and comprises the western third of the Site. EPA is aware of no historical data that shows the extent of the original disposal areas, other than several aerial photographs taken in the 1940s.

Over the past 50 years the Elkton Firehole Site has been farmed by one farmer under a lease agreement with the property's owner. He has cultivated two or three different types of agricultural crops per year, including wheat, corn etc. Based on observations made at the Site by EPA as well as MDE and USACE, this tilling and dragging process appears to have scattered DMM at the surface throughout the 150 acre property. Additionally, freeze/thaw cycles over sixty years may also have contributed to the presence of DMM. The geophysical survey was terminated at 55 acres due to funding issues but it is assumed that most of the property will have to be assessed for possible MEC/DMM, at the surface, as part of this action. Indeed, surface MEC/DMM may well be scattered beyond the aforementioned area of concern. As a result of funding issues, the START geophysical survey was terminated at 55 acres. Therefore additional geophysical survey work will need to be done on the remaining 100 acres.

Until recently an abandoned concrete and steel structure was located along the south western portion of the portion of the Site, adjacent to (and potentially over) a firehole. This structure is known as the Morton Thiokol Rocket Recovery Area (RRA). Neighboring Morton Thiokol (located on the former TEI site) and Boeing, Inc. used this facility to test rocket motors in the 1960s. The remnants of this facility included a launch pad and support facilities. Morton Thiokol removed these structures under the supervision of MDE. This work was completed during July and August, 2005.

As described above, the site is as large as 150 acres and is comprised of open farmland bounded by streams and woodlands. As a result, it appears to be too large an area around which to erect security fencing. Therefore, in March, 2005 the OSC posted warning signs alerting trespassers and nearby residents that EPA is conducting a Superfund cleanup, and provided a phone number for questions. It also appears that portions of the site are utilized for hunting and shooting practice. Numerous buck shot shells litter an area adjacent to the RRA area. Therefore commencing in June, 2005 the OSC contracted for security service to alert nonessential personnel of the hazards of the site and provide another level of protection to the general public.



## **B. Quantities and Types of Substances Present**

While the impetus for this Removal Action is the potential explosives threat posed by MEC at the Site, the following discussion includes information on conventional hazardous substances as well as MEC that has been found. It is assumed that EPA will consider removing any non-explosive hazardous substances which are encountered during the Removal action which appear to be related to the historic disposal of DMM. Additionally, because of the potential safety threat posed by handling MEC, neither EPA, USACE or MDE has excavated potentially explosive MEC to determine if any of it comprises a hazardous substance; therefore the following discussion assumes that the MEC is a pollutant or contaminant.

### **MEC**

MDE's July 2002 geophysical survey of the Elkton Farm Firehole Site reviewed site historical information, aerial photographs, performed site reconnaissance and performed an extensive geophysical survey utilizing EM-31 magnetometer technology. MDE's contractor NAEVA concluded that all historical information indicates the Site contains burn pits used by TEI during the 1940s to burn off thinly spread layers of propellants and fuels. Two distinct anomalies in the Unit Two area were identified. NAEVA recommended another advanced geophysical survey to further delineate and differentiate these anomalies with underground storage tanks and/or underground utilities.

On September 15, 2004 MDE issued its Formerly Used Defense Site (FUDS) Inspection Report of the Elkton Farms Firehole Site. The purpose of the FUDS Inspection was to assess the actual and potential release of hazardous substances from the site by way of groundwater, surface water, soil exposure and air pathways. The scope of the FUDS Inspection included reviewing the available file information, site reconnaissance and sampling under the U.S. EPA Contract Laboratory Program (CLP).

MDE and its MEC contractor UXB, Inc. conducted onsite SI activities in December, 2004 and January, 2005 which included some limited excavation into one of the suspected fireholes. During this visit a number of MEC items were observed, including ammunition projectiles, percussion primers for 40 MM casings, and other items. UXB has stated that

These projectiles may have been loaded with or without high explosives; a detailed inspection of each was not accomplished. Typical primary and secondary explosives associated with these projectiles, primers, casings and cartridge actuated devices are explosives and propellants for primary explosive initiating mixtures, Lead Azide, Lead Styphnate, Fulminate of Mercury, Fulminating Mercury, Acetone Peroxide, Lead Picrate, and Sodium Azide, and secondary explosives boosters Tetrytol, PETN and TNT.

April 5, 2005 letter from UXB to ENSAT



USACE has also identified MEC at the Site which may pose an explosives threat. In a written report documenting the June, 2004 USACE tour of the Site, a number of MEC items were identified, including "a couple of dozen parts and pieces that appeared to be MEC" that MDE had previously gathered, as to which USACE suggested that "a 911 call be placed for Explosive Ordnance Disposal (EOD) to dispose of the items in the bag." George Follett, Resume of Staff Visit, June 6, 2004. USACE further observed,

The surface of the first pbp [potential burial pit] was littered with items that appeared to be ordnance related. Nose and base fuzes. After visually observing hundreds of items on the surface in the vicinity of the pbp, the call to 911 for EOD response was terminated.

Id.

Follett concluded that

Site activities should include a unexploded ordnance (UXO) team providing UXO Safety Support as a minimum. Intrusive activities should provide for on-site disposal of UXO items which are deemed too hazardous to transport over public roadways.

Id.

Since the depth of the fireholes is unknown (apart from their characterization in historical documents as "shallow pits")<sup>3</sup>, it is difficult to estimate the total quantity of MEC which may be present at the fireholes. However, historical documents suggest that during the peak war time production TEI produced a tremendous amount of ordnance. (For a period of time TEI was the sole source of the Navy's 40 mm antiaircraft munitions.) Table 1 recites the total munitions and other explosive materials that were produced at the TEI during the 1940s:

**TABLE 1**

**Triumph (TEI) Explosive Produced**

- 22,059,000 40-mm shells
- 65,000 rifle grenades
- 1,345,000 float lights
- 3,097,000 fuzes
- 12 million aircraft signals
- 100 million detonators
- 121 million primer caps

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<sup>3</sup> A former TEI plant foreman has described the pits as several feet deep.

- 647,000 lbs of pentolite
- 2,383,000 incendiary bombs
- 355,000 hand grenades

### Non-MEC Hazardous Substances

MDE's September 15, 2004 SI concluded as follows:

A toxicological evaluation was prepared for the Firehole site, assuming a residential future use scenario for the site. Risk estimates exceeded EPA and MDE recommended levels for the child resident population for incidental ingestion of and dermal contact with surface soils, with the risk drivers of potential additive effects, chromium, and arsenic. Concentrations detected exceeded the EPA and MDE recommended levels for ingestion of and dermal contact with subsurface soil for the child resident, with the risk drivers of potential additive effects and chromium. Lead was detected in S14 at 1480 mg/kg, which may pose a threat to sensitive populations and the environment. Risk estimates for the incidental ingestion of and dermal contact with groundwater exceeded MDE and EPA recommended levels for all residential populations, with trichloroethene (TCE) as the risk driver.

Samples S13 and S14 were collected in the area defined by MDE's geophysical survey (Appendix C) as the most likely area of the Firehole. Sample analysis showed elevated concentrations of lead, mercury, and arsenic as well as TCE and Aroclor 1254, and the nitroaromatic compound TNT and associated daughter products. The groundwater collected from monitoring well MW2, which is hydraulically downgradient of S13 and S14, was contaminated with significant concentrations of TCE. Subsurface soil samples from the Firehole area were not collected because an obstruction, comprised of a slag-like substance, was encountered at less than 18 inches. Site personnel were concerned that this refusal could also have been caused by the presence of explosive DMM, therefore a sample was not retrieved. Sample S/SS 6 obtained from the vicinity of the TMRA and sample S8 midway between the Firehole and TMRA also exhibited elevated levels of several explosive compounds.

According to the current owners of the property, the Elkton Farm property is under an agreement for sale. It is currently leased to a farmer who raises crops on it; however, in all likelihood, the entire farm will be developed for residential use in the future.

The presence of TNT and daughter products, elevated concentrations of metals, highly volatile TCE detected in surface soils and groundwater easily observable on the ground surface all suggest that further investigation is necessary in order to fully identify any human health risks to

future residential populations. This further investigation will be completed under the supervision of the MDE after this proposed MEC/DMM removal action.

In December 2004 and January 2005 MDE performed a followup soil sampling event specific to nitroaromatic compounds at the firehole site. Results returned in February 2005 indicated elevated levels of TNT at one location close to the surface. This sample, S7, revealed 1,298ppm (>1%) and exceeds EPA Region III Risk Based Concentrations (RBC) for residential end use. The RBC standard is 21 ppm. Presently the Firehole site is used for agricultural purposes but is proposed for residential development.

#### **C. National Priorities List Status**

This site is not presently on the National Priorities List (NPL). The Preliminary Assessment/Site Inspection (PA/SI) inspection is currently under review by MDE and EPA.

#### **D. State and Local Authorities' Roles**

The MDE referred the Elkton Firehole site to EPA for a removal action due to its lack of resources to complete this action. The Site is part of a larger project called the Little Elk Creek One Cleanup Program. The purpose of the project is to develop a collaborative effort among EPA programs, the State, and local officials in the cleanup and revitalization of the Little Elk Creek, Elkton, Md. area. The Maryland Department of the Environment (MDE) has the overall lead of the project and EPA has provided support to them when requested.

In March of 2004, Windsor Management Corporation, the prospective purchaser of the Elkton Farm, which includes the firehole property, verbally expressed its intention to enter the State Voluntary Cleanup Program (VCP). The MDE explained to Windsor that they would be responsible for any residual contamination at the firehole site after EPA had completed their removal. This residual contamination includes but is not limited to scattered munitions debris, contaminated soils and contaminated groundwater.

### **IV. THREATS TO PUBLIC HEALTH OR WELFARE OR THE ENVIRONMENT**

Section 300.415 of the NCP lists the factors to be considered in determining the appropriateness of response activities. Paragraphs (B)(2)(i), (ii), (iv), (v) and (vii) apply to the need for response at the Elkton Farms Firehole Site as follows:

300.415(b)(2)(i) *"Actual or potential exposure to nearby human populations, animals, or the food chain from hazardous substances or pollutants or contaminants"*

On May 28, 2004 the USACE, Ordnance and Explosive Safety Specialists, Baltimore District,

Md., at the request of MDE, performed a site visit to assess unexploded ordnance hazards. The following Resume of Site Visit document dated June 06, 2004 concluded "MEC related items were discovered on the surface of the property visited. Approximately 8 acres were covered in the site visit walkover. Crops are growing on the site. The site is reported to be farmed year round. What appeared to be projectile nose and tail fuzes, and parts and pieces of pistol flares were observed at the site. There were several areas observed that had no or very little crop growth in relation to the rest of the crop in the area." Recommendations from this site visit were "Site activities should include a unexploded ordnance (UXO) team providing UXO Safety Support as a minimum. Intrusive activities should provide for on-site disposal of UXO items which are deemed too hazardous to transport over public roadways."

On June 29, 2004 the USACE Baltimore District issued a draft Risk Assessment Code Score (RAC) for the Site. The RAC score is utilized by the USACE to prioritize response actions at FUDs sites. The RAC score for this site was 1 (II-A). This score depicted the evaluation to be a high risk with a severity category of critical. The narrative portion of this document revealed "The Navy paid for the construction of over 500 buildings to be used by the contractor TEI for the manufacture of ordnance (40mm shells) and other ordnance related products. A walkover was conducted in the suspected area of the former firehole on 28 May 2004. Numerous suspect MM/MEC related items were observed during the site visit."

At the request of the EPA Site Assessment Manager (SAM) and in coordination with the FOOSC, the Agency for Toxic Substances and Disease Registry (ATSDR) performed a health consult focusing on the potential for uptake of nitrosamine compounds by plants. ATSDR issued its consult dated 06/01/05. According to this report "ATSDR does not expect that chemical concentrations in surface soil from the Firehole portion of the site will pose a public health concern for adults or children residing near or visiting the Firehole portion of the site in the future, if appropriate measures (e.g., the proposed removal actions) are taken to eliminate contact with the elevated areas of contamination identified in the various sampling investigations. . . . ATSDR recommends that removal activities continue at the Firehole portion of the site to address the elevated levels of nitroaromatic compounds in soil, as well as unexploded shell detonators, rocket motors, and other materials that pose physical hazards."

The quantity of MEC/DMM scattered throughout the surface of the Site and within the fireholes is unknown. It is evident however that there exists thousands of potentially explosive and combustible fuses, primers and large 40mm and 20 mm shells. It is also unclear the stability of each item as a result of degradation of their individual casings, caused by both the natural elements over the past 60 years and incomplete burn during the disposal process itself conducted in the 1940s. According to USACE UXO Safety Specialists, each item should be considered dangerous from an explosives standpoint and individually could, if agitated, inflict serious bodily damage including death. Therefore the OSC purposely decided not to continue with intrusive activities to advance this removal site assessment but rather secured the site in anticipation of a safe and professional removal of each item.

In addition to the explosives concerns at the site and at the request of the EPA Site Assessment Manager (SAM) and in coordination with the FOSC, the Agency for Toxic Substances and Disease Registry (ATSDR) performed a health consult focusing on the potential for uptake of nitrosamine compounds by plants. ATSDR issued its consult dated 06/01/05. According to this report "ATSDR does not expect that chemical concentrations detected in the surface soil collected from the site will pose a public health concern for adults or children residing on the site in the future, if appropriate measures are taken to prevent regular contact with the hot spots of contamination identified. Examples of the hot spots of contamination include the TNT contamination at S7 from the March 2005 sampling event, and the metals contamination at S2 from the December 2004/January 2005 sampling event." Therefore this action proposes to remove the TNT hotspot at S7.

300.415(b)(2)(ii) *"Actual or potential contamination of drinking water supplies or sensitive ecosystems."*

In May 2003, MDE collected five groundwater samples from site monitoring wells and analyzed them for total and dissolved metals, VOCs, SVOCs, pesticides and PCBs, nitroaromatic compounds, and perchlorates. MDE also collected a water sample from a domestic well at this time to evaluate background groundwater conditions.

- Health-based screening levels for two VOCs were exceeded in the two samples from the onsite groundwater monitoring well MW-2; trichloroethylene (TCE) was detected at 190 ug/L and 170 ug/L, and 1,1,2-trichloroethene was detected at 5 ug/L.
  - A trace level (below a health-based screening value) of 4-amino-2,6-dinitrotoluene (.015 ug/L) was also detected in one of the two samples from MW-2.
- Levels of arsenic, lead, and manganese exceeded health-based screening values in the total metals analysis of a few of the groundwater samples. The highest level of total manganese (1,250 ug/L) was detected in the background monitoring well sample (MW-1). Furthermore, the concentration of this metal in MW-1 was reduced below health-based screening levels to 221 ug/L in the dissolved metals analysis. Arsenic was detected at approximately 6 ug/L in MW-3 and below the detection limit in the remaining total metals analyses; it was not present in any of the dissolved analyses. Lead was detected from 11 – 28.5 ug/L in the total analyses, with the highest level found in the background monitoring well sample MW-1, and again was not detected in any of the dissolved metals analyses.
- No perchlorates were detected in any of the groundwater samples.

Presently no drinking water source is impacted by these concentrations. However there is the potential for drinking water to be impacted as a result of the proposed residential development. This potential will be addressed by MDE under their long term Voluntary Cleanup Program for this site. This will not be addressed under this proposed action.

300.415(b)(2)(iv)

*"High levels of hazardous substances or pollutants or contaminants in soils largely at or near the surface, that may migrate."*

According to the MDE, USEPA-START contractor, and the USACE, the Elkton Farm site is scattered with potentially thousands of unexploded MEC/DMM. Both the draft USACE Risk Action Code (RAC) Summary Document dated June, 2004 and EPA START RAC Summary document dated May 2005 rated this site as Category I. Category I generally requires immediate response by the DOD Military Munitions Response Program (MMRP), in accord with their DERP program.

300.415 (B)(2)(v)

*"Weather conditions that may cause hazardous substances or pollutants or contaminants to migrate or be released"*

The Elkton Farm property lays at the confluence of Little Elk Creek with Laurel Run. Natural drainage on the site is in a generalized north to south direction. There is a slight drainage divide on the property which directs surface runoff to either Laurel Run or Little Elk Creek. Surface water infiltrates the soil to groundwater, or is discharged via overland flow to Laurel Run or Little Elk Creek. Laurel Run discharges into Little Elk Creek which flows southward into Big Elk Creek and eventually to the Chesapeake Bay.

The farthest upstream probable point of entry for the surface water route originates at the on-site drainage ditch on the Zeitler Road border of the site. The drainage ditch travels west for approximately 500 feet before emptying into Laurel Run, a perennial freshwater stream and a fishery. Laurel Run flows 0.625 miles to its confluence with Little Elk Creek. The area of the confluence of Laurel Run and Little Elk Creek is classified as Palustrine Aquatic Bed wetlands. Little Elk Creek flows south southeast for approximately 4.0 miles before emptying into the Big Elk Creek. Big Elk Creek flows approximately 2.25 miles to the point where it empties into Elk River. Elk River flows approximately 12.0 miles to its confluence with the Chesapeake Bay. The 15-mile surface migration pathway ends in the Elk River three miles from the confluence of Elk River with the Chesapeake Bay. The Elk River is classified as Estuarine intertidal wetlands and is a fishery.

Washout is evident on the site. Numerous metal objects representing fuses, shells, detonators are visible in the site drainage ditches throughout the site. Adverse weather conditions including heavy precipitation potentially can carry these objects towards Laurel Run and Little Elk creek.

## **V. ENDANGERMENT DETERMINATION**

Actual or threatened releases of hazardous substances, pollutants or contaminants from this Site, if not addressed by implementing the response actions outlined in this funding request,

may present an imminent and substantial endangerment to the public health, welfare, or the environment.

## **VI. EXEMPTION FROM STATUTORY LIMITS**

### **A. Emergency Exemption:**

#### **1. Immediate risk to public health or welfare or the environment.**

There exists an immediate risk to both public health and the environment present at the Elkton Farms Firehole Site. The continued presence of MEC/DMM poses both chemical and an explosive risk to anyone coming in contact with. Security is being maintained at the main access point to the site, but this cannot guarantee the public safety indefinitely. The Site preliminarily was rated Category I (the highest) by the USACE, requiring an immediate response.

#### **2. Continued response actions are immediately required to prevent, limit, or mitigate an emergency.**

Currently, only 50 acres of the Site have been adequately characterized for MED/DMM as previously stated. In addition to addressing this material immediately, up to 150 additional acres need to be characterized. The explosive and chemical threat posed by these wastes require immediate attention to protect the public health.

#### **3. Assistance will not otherwise be provided on a timely basis.**

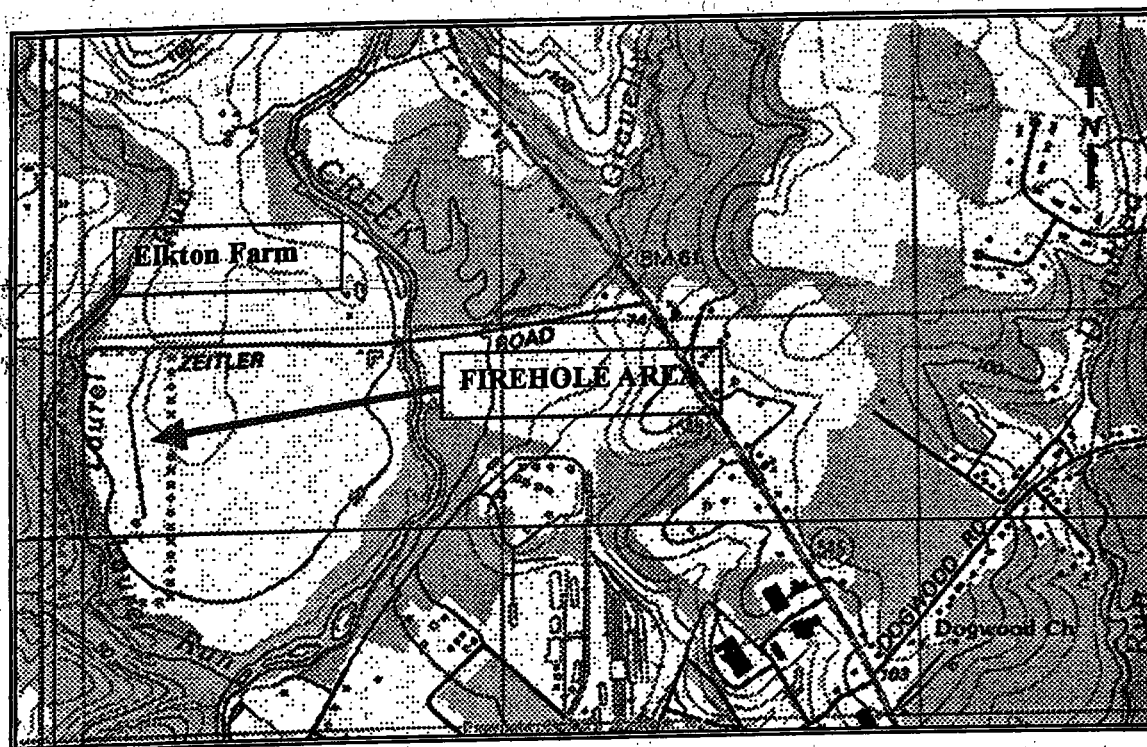
Neither MDE nor the Army currently has the resources and/or funding to address the contamination at the Site immediately. Although EPA is continuing its efforts to identify viable PRPs who might be able to conduct work, or reimburse EPA for its response costs, at this time there are no other funding sources available.

## **VII. PROPOSED ACTIONS AND COSTS**

The Removal Action proposed for the Site is designed to mitigate the imminent threat by removing the MEC/DMM and limited/discrete TNT contamination in the soil at the Site. Presently the site is characterized as a 55 acre plot of farmland located to the south of Zeitler Rd., east of Laurel Run Creek and to the west of Little Elk Creek in Elkton, Cecil County, Md. Refer to Figure 2. A geophysical survey and removal of DMM found in the outlying area, (outside the 55 acres described herein) including the wooded area and creeks is expected to be performed by MDE and others. However, this Action Memo will include this potential activity should the MDE be unable to perform this task. The DMM are located in two fireholes at depths ranging from the surface to approximately 8 feet. The DMM are also scattered throughout the surface soils on the site. The geophysical survey performed by START contractor revealed numerous locations/anomalies of potential DMM and different

types of DMM such as fuses, 40mm and 20mm casings. A large number of these DMM can be readily seen while walking thru the site.

**Figure 2**



Presently the site is overgrown with winter wheat at a height of 3 feet. This provides for excellent ground cover and runoff control but will have to be removed. Based on the geophysical survey report, at least 55 acres of this flat farmland will be gridded into 200 x 200 foot squares. Each grid will receive a thorough inspection and surficial soil removal through a large sieve for removal of all metal items. The items will be individually sorted based on size and potential for explosion. The larger items will be temporarily staged behind sandbag blast walls or within a magazine. The smaller items can be run thru a large industrial shredder for demilitarization and residual disposal. The OSC with assistance from the USACE and its MEC/UXO-experienced contractor will perform this action. This activity will be performed under a strict Health and Safety Plan with emphasis towards worker protection and experienced UXO professionals. The USACE will be responsible for ensuring that the site is clean of MEC/DMM under an Inter Agency Agreement with EPA.

As this activity is ongoing the OSC and START contractor will initiate a sampling event to define the extent of TNT contamination in surface soils in the vicinity of S7. It is not anticipated that this contamination is widespread. MDE results have indicated it to be a



discrete area not larger than a 50 x 50 foot area near the Morton Thiokol Rocket Recovery Area. Soil removal and offsite disposal will be the responsibility of the USACE under the IAG.

Based on the START geophysical report there are at least two fireholes estimated to be 50 by 25 feet and up to 8 foot deep. These holes will be addressed by the USACE in the same manner described above. Track hoes with blast shields will unearth the metal and soil and run the material thru a sieve mechanism. The larger items will be staged behind blast walls and the smaller less explosive items will be shredded.

#### **A. Proposed Actions**

1. Mobilize personnel and equipment;
2. Provide Site security by erecting temporary banner fencing and providing a security guard during non-working hours to protect equipment;
3. Provide erosion, sedimentation and storm water control to minimize release of DMM from the Site;
4. Characterize the extent and depth of TNT contamination at the S7 sample area on the site;
5. Characterize the extent and depth of additional DMM beyond the 55 acres (potentially up to 150 acres) into areas within the tree line and the creek itself utilizing geophysical survey equipment and UXO specialists;
5. Excavate, stage and sieve soils laden with DMM on a pre designated 200 ft. grid by grid basis;
6. Stage large unstable DMM within specially designed blast/sandbag walls or prestaged magazines;
7. Perform onsite demilitarization of all smaller DMM by appropriate means according to the specific DMM;
8. Typical treatment method may include crushing of the smaller DMM and vent and burn operations of the larger;
9. Excavation of limited quantity of TNT contaminated soils and transport off site for disposal;
10. Conduct Site restoration as determined appropriate by the OSC and revegetation to prevent erosion of areas soils disturbed by Removal activities;
11. Coordinate with State and Local authorities on removal and post-removal activities and conditions;
12. Demobilization of personnel and equipment.

#### **B. Contribution To Remedial Performance**

The Site has not been proposed for the NPL, therefore there are no Remedial Actions planned for the Site at this time. However, the proposed Removal Action is consistent with Superfund cleanup policy that applies to both Remedial and Removal sites and will contribute to and not impede future Remedial action and/or MDE voluntary cleanup procedures, at the Site.

## **C. Compliance With ARARs**

The proposed Removal Action will comply with Applicable or Relevant and Appropriate Requirements (ARARs), to the extent practicable considering the exigencies of the situation. The OSC intends to comply with all relevant federal and state laws relative to proper transport and disposal of hazardous wastes and site health and safety.

## **D. Estimated Costs**

Due to the nature and volume of the hazardous substances (explosive DMM and TNT contaminated soils) found at the Site, the OSC has initiated discussions with the US Army Corps of Engineers (USACE), Baltimore District for assistance. Under an Interagency Agreement between the EPA Region III and the USACE, the OSC will enlist the technical (EOD) support and engineering expertise with respect to project management and utilization of the USACE contractor in the safe handling, onsite demilitarization, transportation (if required) and final clearance of the site for return to reuse as either a farmland or as a residential development area as is currently proposed.

The OSC with assistance from the START contractor and MDE will perform onsite oversight of the USACE. In addition the OSC will complete the characterization of the TNT laden soils and the determination of whether DMM items are located outside the 55 acre area of concern. This will involve additional geophysical survey work to be performed by START.

### **I.Extramural Costs**

#### **A. Regional Removal Allowance Cost:**

IAG with USACE/Total Cleanup Contractor Costs: (Includes DMM/UXO contractor, excavation, transport, disposal, Onsite DMM handling, etc)	\$2,500,000.00
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IAG with USACE/Project Management Costs: (Admin., MEC Safety, QA support)	\$ 250,000.00
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Subtotal Regional Removal Allowance Cost:	\$2,750,000.00
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#### **B. Other Extramural Costs Not Funded from the Regional Allowance:**

Total START, including multiplier costs: (geophysical surveying, sampling and oversight)	\$ 250,000.00
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Total CLP	\$ 50,000.00
Subtotal	\$ 300,000.00
Subtotal, Extramural Costs	\$3,050,000.00
Extramural Costs Contingency	\$ 600,000.00
<b>TOTAL, EXTRAMURAL CEILING</b>	<b>\$3,650,000.00</b>

## **VIII. EXPECTED CHANGE IN THE SITUATION SHOULD ACTION BE DELAYED OR NOT TAKEN**

Without removal of the munitions and explosives of concern/discarded military munitions which are described in this Action Memorandum, there is the potential for one of these devices to seriously injure a site trespasser, farmer or resident in the area. There is the potential for washout of these munitions into nearby Laurel Run Creek or Little Elk Creek creating a scenario where nearby children could come into contact with them. In addition new proposed development of single family homes on this site and the adjacent farmland would be precluded.

## **IX. OUTSTANDING POLICY ISSUES**

There are no outstanding policy issues pertaining to the Elkton Farms Firehole Site.

## **X. ENFORCEMENT STATUS**

The EPA Region III Office of Enforcement has been provided with all background information relative to this site (see attached Confidential Enforcement Addendum). The total EPA costs for this removal action based on full-cost accounting practices that will be eligible for cost recovery are estimated to be \$<sup>4</sup> 4,735,000.

Direct Extramural Costs:	\$3,650,000.00
Direct Intramural Costs:	\$ 100,000.00
Indirect Costs:	\$ 985,000.00
<b>Total Estimated Cost:</b>	<b>\$4,735,000.00</b>

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<sup>4</sup>Direct Costs include direct extramural costs and direct intramural costs. Indirect costs are calculated based on an estimated indirect cost rate expressed as a percentage of Site-specific direct costs, consistent with the full cost accounting methodology effective October 2, 2000. These estimates do not include pre-judgment interest, do not take into account other enforcement costs, including Department of Justice costs, and may be adjusted during the course of a removal action. The estimates are for illustrative purposes only and their use is not intended to create any rights for responsible parties. Neither the lack of a total cost estimate nor deviation of actual total costs from this estimate will affect the United States' right to cost recovery.

The OSC has provided the EPA Removal Enforcement Section with information available to pursue any and all enforcement actions pertaining to the Site. A summary of all enforcement activities to date is attached as an addendum to this document.

## **XI. RECOMMENDATION**

This decision document represents the selected removal action for the Elkton Farms Firehole Site, in Elkton, Cecil County, Maryland developed in accordance with CERCLA as amended, and not inconsistent with the NCP. This decision is based on the administrative record for the Site.

Conditions at the Site meet the criteria for a Removal Action as set forth in Section 300.415 of the NCP, 40 C.F.R. § 300.415. I recommend your approval of the proposed removal action. The total removal action project ceiling if approved will be \$ 4,735,000.00. Of this, an estimated \$2,750,000 comes from the Regional removal allowance.

APPROVED: Chlorine Fenn DATE: 9/28/05

DISAPPROVED: \_\_\_\_\_ DATE: \_\_\_\_\_

ATTACHMENT: Confidential Enforcement Addendum